REMARKS

Claims 14 and 16-50 are presently pending in the application. Claims 1-13 and 15 have been canceled without prejudice or disclaimer, and Claims 17-50 have been added. Reconsideration and allowance of all claims are respectfully requested in view of the following remarks.

As a preliminary matter, the Examiner is respectfully requested to acknowledge receipt of six (6) sheets of corrected formal drawings, which add lead lines to the reference numerals. Approval of these drawings is respectfully requested.

The Examiner has objected to Claim 16 for reciting the limitation, "the step of taking in local seawater as ballast" in lines 1-2, stating that there is insufficient antecedent basis for this limitation in the claim. Claim 16 has been amended to correct for any lack of antecedent basis. Thus, the Examiner's objection should now be withdrawn.

However, the Examiner has found Claims 14 and 16 allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 14 and 16 have been rewritten into independent form and should now stand allowed.

New dependent Claims 17-25, which depend from Claims 14 and 16, should now also stand allowed.

The Examiner has rejected Claim 9 rejected under 35 U.S.C. §102 as being anticipated by Lalonde et al. (USP 4,886,607), (hereafter Lalonde). The Examiner has also rejected Claim 1 under 35 U.S.C. §103(a) as being unpatentable over Lalonde. Claims 1-3, 6-8, 9 and 10 were rejected by the Examiner under 35 U.S.C. §103(a) as being unpatentable over Husain et al. (USP 6,361,695), (hereafter Husain), in view of Tyllila (USP 6,638,420),

and Wipperman (USP 6,672,233). Claims 4, 5, and 11-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Husain in view of Tyllila and Wipperman as applied to claim 1 above, and further in view of Tompkins et al. (USP 5,932,091), (hereafter Tompkins). Finally, Claim 15 was rejected under 35 U.S.C. §103(a) as being unpatentable over Perlich et al. (USP 6,773,611), (hereafter Perlich), in view of Tyllila and Wipperman.

Claims 1-13 and 15 have been canceled without prejudice or disclaimer and new Claims 17-49 added.

The Applicants respectfully submit that neither Lalonde, Husain, Tyllila, Wipperman, Tompkins, nor Perlich, either alone or in combination, teaches or suggests a wastewater ballast method comprising the steps in the order of: collecting wastewater generated during operation of a vessel; filtering the wastewater; treating the wastewater to meet applicable regulatory standards; storing the treated wastewater in a wastewater ballast tank; transferring the treated wastewater to a discharge unit; and discharging the treated wastewater from the vessel, as recited in new Claim 26.

Rather, Lalonde discloses collecting wastewater into a tank 24 on a boat, filtering the wastewater in pre-filter chamber 36, holding the filtered wastewater in retention chamber 38, and then discharging the filtered wastewater overboard when it reaches a certain fluid level. Lalonde does not teach or suggest treating the wastewater after the filtering step, to meet applicable regulatory standards.

Husain discloses collecting wastewater in a collection tank 6 shipboard, then grinding the solids from the wastewater in an equalization tank 14, oxygenating the wastewater in a bioreactor tank 30, filtering the resulting mixed liquor wastewater in container 42, disinfecting the treated wastewater in disinfection unit 70, transferring the treated wastewater

to backpulse tank 76 and into sump tank 80, and then discharging the treated wastewater as effluent.

However, Husain does not teach or suggest treating the wastewater after the filtering step, to meet applicable regulatory standards. Further, the bioreactor 30 of Husain does not treat the wastewater – rather it simply allows the untreated wastewater to be oxygenated. No "treatment" of the wastewater is conducted. However, in the present invention, the wastewater is treated by decontamination methods, such as applying electromagnetic radiation.

Tyllila discloses a sewage plant where sewage or wastewater is conducted through a first aeration chamber 1, second aeration chamber 2, a settling chamber 3, a disinfection chamber 4a, a storage container 4b, and then into the sea or a storage facility. Tyllila is not directed to conducting wastewater treatment on a boat, and thus, is directed to non-analogous art. Further, Tyllila does not teach or suggest treating the wastewater after it is filtered, to meet applicable regulatory standards. In fact, there is no filtering step involved in Tyllila at all. Further, providing air into the chambers 1, 2 would not be considered "treating" the wastewater to meet applicable regulatory standards, as defined by the present invention (i.e., applying electromagnetic radiation).

Tompkins discloses shipboard filtration of an effluent from a non-chemical type of oil/water separator for further reduction in oil concentration of oily wastewater in the cleansed discharge from the separator. The oily waste from bilge 10 is received in a holding tank 18 in section 14 from which it is delivered to a water separator 20. Bulk oil is initially separated from the oily wastewater and fed to a waste oil tank 22 in section 14, while the oil reduced effluent from the separator 20 is delivered to the filtration section 16 for further

reduction in oil content before disposal by return to the seawater through overboard discharge 12. The effluent from separator 20 is routed and regulated for further processing through flow control 24 of section 16 so as to direct such effluent for ultrafiltration treatment in membrane system 26 within section 16. Outflowing permeate from ultrafiltration membrane treatment system 26 is continuously monitored for oil content through display 30 during recirculation by diverter valve 27 to the holding tank 18 to which permeate is diverted in the event high oil levels are sensed therein. The effluent is then discharged overboard. Sampling valves allow collection of oily waste separated effluent, filtration permeates and oil concentrates in connection with the evaluation of system performance.

Tompkins does not teach or suggest treating the wastewater after it is filtered, to meet applicable regulatory standards. Further, the addition of Tompkins does not make up for the deficiencies in Lalonde, Husain, and Tyllila.

Perlich discloses a ballast water treatment system 10 that includes a biocide generation system 20, a control system 30, a ballast tank system 60, biocide generation system 70, a water intake system 80, and a treated ballast water discharge system 90. The ballast water treatment system 10 provides ballast water via the water intake system 80, the bulk of which is transferred to the ballast tank system 60, while a portion of the ballast water is transferred to the biocide distribution system 70 and/or the biocide generation system 20. The biocide generation system 20 can include a chemical storage module, such as one or more precursor chemical tanks, a biocide generator, an intake system, and discharge system. Subsequently, the ballast water treatment system 10 treats the ballast water with the biocide. The biocide can be introduced into the ballast tank system 60 through the biocide distribution system 70. After substantial biokill in the ballast water is completed, the treated ballast water

can be discharged using the treated ballast water discharge system 90. The control system 30 is capable of controlling the biocide concentration in the ballast tank system 60. Sea or fresh ballast water can be introduced into the ballast tank system 60 via the water intake system 80. The ballast water can be filtered before entering the ballast tank system 60. Perlich also discloses a monitoring device used in the control system 30 to determine if substantial biokill has been completed and the risk of discharging organisms has been decreased to within levels consistent with local, state, federal, and international regulations.

However, Perlich does not teach or suggest the steps of filtering the wastewater and then treating the wastewater to meet applicable regulatory standards. Rather, Perlich discloses separating the wastewater into two paths (see Fig. 2B) – 1) taking in the wastewater and sending it to the biocide distribution system 70, the biocide generation system 20, and then to the ballast tank system 60; or 2) filtering the wastewater and then storing it in the ballast tank system 60. However, in the first path, the filtering step does not take place prior to the biocide treatment step – only in the second path. Further, such a step would not be obvious to add, since adding a filtering step prior to a boicide step would be extraneous. Perlich makes it clear that the bulk of the wastewater is sent to the ballast tank system 60 without adding biocide,and only if desired is the bulk of the wastewater filtered.

Accordingly, Claim 26 is patentable over either the individual or the combination of the Lalonde, Husain, Tyllila, and Tompkins references.

The addition of Wipperman does not make up for the deficiencies in Lalonde, Husain, Tyllila, Tompkins or Perlich.

Further, since Claims 27-43 depend from Claim 26, they are also patentable over the applied prior art for the reasons cited above with respect to Claim 26.

With respect to Claims 44 and 50, neither Lalonde, Husain, Tyllila, Tompkins, Wipperman, nor Perlich, teaches or suggests a wastewater ballast system, including a filtering unit for filtering untreated wastewater from a vessel; a decontaminating unit for treating said filtered wastewater to meet applicable regulatory standards; a monitoring unit for monitoring said treated wastewater to ensure that said treated wastewater meets predetermined thresholds; a wastewater ballast tank for storing said treated wastewater; a first disinfection unit for disinfecting said treated wastewater in said wastewater ballast tank; and a wastewater ballast discharge unit for discharging said treated wastewater from said wastewater ballast tank.

Rather, the applied prior art references are silent with respect to a decontamination unit which treats filtered wastewater to applicable regulatory standards, as discussed above with respect to Claim 26.

Accordingly, Claims 44 amd 50 are patentable over the applied prior art.

With respect to Claims 28 and 45, none of the applied prior art references teaches or suggests a monitoring unit including a turbidity monitor to measure a turbidity of the treated wastewater. The applied prior art references are silent with respect to this feature. Thus, Claims 28 and 45 are patentable.

With respect to Claims 37-39 and 47-49, none of the applied prior art references teaches or suggests a second disinfection unit which disinfects the treated and disinfected wastewater from the wastewater ballast tank. Thus, Claims 37-39 and 47-49 are patentable.

With respect to Claim 49, none of the applied prior art references teaches or suggests a second disinfection unit which includes a wastewater ballast discharge unit. Accordingly, Claim 49 is patentable.

Further, since Claims 45-49 depend from Claim 44, they are also patentably distinguishable over the applied prior art for the reasons cited above with respect to Claim 44.

If the Examiner believes that there is any issue which could be resolved by a telephone or personal interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee for such an extension is to be charged to Deposit Account No. 04-1061.

Respectfully submitted,

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IN THE DRAWINGS:

The Examiner is respectfully requested to acknowledge the receipt of six (6) sheets of corrected formal drawings. Lead lines have been added to the reference characters. The Examiner is respectfully requested to approve the corrected formal drawings.